

We claim

1. A modular construction system comprising a plurality of panels,
said panels having peripheral frame elements defining a top channel, a
bottom channel, and side channels and an exterior planar sheet element, and an
interior planar sheet element, and an inner core region, said inner core region
5 filled with an adhesive bonding material that attaches said sheet elements to said
frame and to one another, and further comprising:
a bottom strut, said bottom strut received in said bottom channel,
a top strut, said top strut received in said top channel, and
vertical tie means, said vertical tie means positioned between two adjacent
10 panels to connect said top strut to said bottom strut and restrict the movement of
said top strut and bottom strut away from one another.
2. The system recited in claim 1 wherein said vertical tie means comprise
elongate threaded rods.
3. The system recited in claim 1 wherein said vertical tie means comprise
15 wire in tension.
4. The system recited in claim 1 wherein said channel in said panel is
formed continuously around the periphery of the panel.
5. The system recited in claim 1 wherein an axial section of said strut
comprises a "U shaped" profile.
- 20 6. The system recited in claim 1 wherein said interior sheet is comprised
of gypsum board.
7. The system recited in claim 1 wherein said exterior sheet is comprised
of cement board.
8. The system recited in claim 1 wherein said bonding material comprises
25 polyurethane foam
9. The system recited in claim 1 wherein said bottom strut and said top
strut are parallel with one another.
10. The system recited in claim 1 wherein said panels are polygonal.
11. The system recited in claim 1 wherein said bottom and said top strut
30 are not parallel to one another.
12. The system recited in claim 11 wherein said panels are trapezoidal.

13. The system recited in claim 1 further comprising a hook and loop fastening system, wherein said hook and loop fastening system is attached to opposite lateral sides of the frame of abutting panels.

5 14. A method of making a wall comprising securing an elongate strut on a base element, positioning a plurality panels having channels on a bottom surface on said elongate strut, placing a top strut in a top channel provided in each said panel, positioning a tie rod between said first strut in a passage formed between adjacent and abutting panels, engaging receiving and securing means in the bottom strut and securing the top of said tie rod thereby preventing said top strut
10 from movement with respect to said bottom strut.

15 15. The method as recited in claim 14 wherein said panels comprise a laminate construction including a bottom planar sheet, a core region filled with an adhesive component and a top planar layer.

16. The method recited in claim 14 wherein said base element comprises a
15 floor.

17. The method recited in claim 14 further comprising first setting a corner panel to said base element, wherein said corner panel extends in more than one plane.

20 18. A modular panel comprising a plurality of frame elements, a front sheet, a back sheet and a core region filled with an adhesive,

said frame elements comprising a top member, a bottom member and two lateral members, wherein said top and bottom members have abutting surfaces that are perpendicular to the lateral sides of said panel, said members further comprising channels, said channels running along the length of each member,

25 19. The modular panel recited in claim 18 wherein said channel is positioned in the center of said abutting surfaces.

20. The modular panel recited in claim 18 wherein said channel is offset from the center of said abutting surfaces.

30 21. The modular panel as recited in claim 18 wherein said abutting surface comprises two parallel strips separated by said channel and said strips are in the same plane.

22. The modular panel as recited in claim 18 wherein said abutting surface comprises a planar strip positioned adjacent to said channel and said panel further

comprises a second planer strip, opposite said channel and parallel with said abutting surface and offset from said abutting surface thereby comprising an offset side.

23. The panel recited in claim 22 wherein said offset side is positioned internal to said structure and is adapted to receive a tubular chase.

24. A modular construction system for assembling structure as recited in claim 1 further comprising an elongate foam sleeve, said sleeve having means to receive said tie rods and said sleeve adapted to fit and be engaged by said lateral channel on said panels.

25. A method of making a modular panel comprising, cutting to create a plurality of frame members, said frame members comprising channels running along their respective lengths, assembling a plurality of frame members together, placing a bottom planar sheet on a press, placing said frame member on said press, placing a top planar sheet on said frame member, wherein said bottom planar sheet, said frame and said top planar sheet, define an interior space, placing a top press member on said top planar sheet, wherein said top and said bottom press member maintain said top and bottom sheets a predetermined distance from one another, injecting adhesive between said bottom and top sheets and into said interior space.

26. The method recited in claim 25 wherein said adhesive comprises polyurethane foam.